

Efficacy of Antihistamine Nasal Spray Compared with Oral Antihistamine in Treatment of Allergic Rhinitis

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ABSTRACT

Introduction: Allergic rhinitis is described as nasal membrane inflammation and is characterized by a symptom complex of sneezing, nasal congestion, itching, and rhinorrhea. These structures are also involved to some extent due to the continuity of the mucosal wall of the nose with the paranasal sinus and its communication with the ears through the Eustachian tube and with the eyes with the nasolacrimal duct.

Objective: To determine the efficacy of antihistamine nasal spray compared with oral antihistamine in treatment of allergic rhinitis.

Method: This Randomized control trial was conducted at the ENT department, Services Hospital, Lahore for 18 months from 01-02-2020 to 31-08-2022. Sample 450 patients of Allergic rhinitis of both sexes between the ages of 15-50 years were selected using simple random sampling technique. Patients were divided into 2 groups. Group A received oral antihistamine ebastine 10mg OD whereas Group B received nasal antihistamine spray olopatadine 0.6% (600mcg/100microlitre). Patients were then followed up every 2 weeks for 01 month. Data was entered and analyzed in SPSS.

Results: Total 450 patients were enrolled. The mean age was 24.5+ 3.0 years. There were 270(60%) male and 180(40%) female. In group A, there were 72(32%) patients 10 to 30 years of age group and 153(68%) were 30 to 50 years of age group. In group B, 65(28.8%) patients between 10 to 30 years and 160(71.1%) above 30 years of age group. Table: 2 In our study, sneezing was the most common 441(98%) followed by rhinorrhea 427(94.8%), nasal obstruction 338(75.1%), etc... In Group A, 153(68%) patients got relief and 72(32.0%) patients felt decrease in symptoms of Allergic rhinitis. In Group B, 144(64.0%) patients got relieved of symptoms, 81(36.0%) patients were partially relieved.

Conclusion: The conclusion of the study that oral antihistamine and intranasal antihistamine nasal spray proved that treatment results of both treatment options were comparable in terms of reduction in the symptoms of allergic rhinitis.

AIM: Our aim of the research is to determine the efficacy of antihistamine nasal spray compared with oral anti histamines in the treatment of allergic rhinitis. The sedating effects of oral antihistamines can totally be avoided in case nasal sprays have the same efficacy.

Keywords: Allergic rhinitis, Antihistamine, Seasonal allergic rhinitis,

INTRODUCTION

Inflammation of the nasal mucosa is the general definition of rhinitis. Up to 40% of people can be affected by this prevalent illness.(1) Sneezing, nasal pruritus, nasal obstruction, and clear nasal discharge are symptoms of allergic rhinitis. They are brought on by IgE-mediated reactions against inhaled allergens and include mucosal inflammation fueled by type 2 helper T (Th2) cells.(2) Nasal congestion is most common and bothersome symptom among patients of allergic rhinitis. (3)In the second to fourth decades of life, allergic rhinitis is most common, and there after it gradually declines.(3,4)

Seasonal pollens and moulds are important allergies, as are enduring indoor allergens such dust mites, pets, vermin, and some moulds. The geographic area and level of urbanisation affect the pattern of predominant allergens. The fact that rhinitis and asthma frequently co-exist provides evidence that allergen stimulation of the upper airways not only causes a local inflammatory response but also triggers the inflammatory processes in the lower airways.(5)

Seasonal pollens and moulds are important allergies, as are enduring indoor allergens such dust mites, pets, vermin, and some moulds. The geographic area and level of urbanisation affect the pattern of predominant allergens. The fact that rhinitis and asthma frequently co-exist provides evidence that allergen stimulation of the upper airways not only causes a local inflammatory response but also triggers the inflammatory processes in the lower airways. (5)

When someone is exposed to an allergen to which they are sensitised, the allergen's cross-linking of IgE linked to mucosal mast cells causes nasal symptoms to appear within minutes. The cells inflammation occurs in the nasal mucosa during the course of the next hours, with the help of a variety of chemokines and cytokines released by mast cells, epithelial cells, dendritic cells, T cells, innate lymphoid cells, eosinophils, and basophils. (6) Nasal

symptoms can linger for hours after allergen exposure as a result of mucosal inflammation, and the mucosa becomes more sensitive to the precipitating allergen (priming), as well as to other allergens and non-allergenic stimuli such strong scents and other irritants.(7)

Treatment should focus on reducing nasal symptoms as well as the underlying inflammatory processes; such methods include avoiding allergens, using medication, and using immunotherapy. Experiencing an allergen causes symptoms. Therefore, avoiding allergens is a sensible course of action that is advised in all asthma and rhinitis guidelines. (7)¹⁰

H1-antihistamines, intranasal glucocorticoids, and leukotriene-receptor antagonists are pharmacologic therapy possibilities. Since many of these medications are sold over-the-counter, oral antihistamines are typically used as the first line of therapy. Antihistamines of later generations are favoured since they are equally effective and less sedating than earlier medications.(8)

Topical nasal decongestants are more effective than oral agents, but there are reports of rebound congestion (rhinitis medicamentosa) or reduced effectiveness beginning as early as 3 days after treatment and only short-term use is recommended. The most effective medication for treating seasonal allergic rhinitis is intranasal glucocorticoids, but their overall effectiveness is only moderate. (9)

Allergen immunotherapy is the next step in treating these people. Despite the fact that subcutaneous injection of allergen immunotherapy has historically been used, rapidly dissolving tablets for sublingual administration have just been approved for the treatment of grass and ragweed allergy. Patients had their reflecting and immediate nasal symptoms evaluated in the morning and the evening (sneezing, stuffy nose, runny nose, and itchy nose, which compose the total nasal symptom score [TNSS]).

Patients with seasonal allergy rhinitis who used loratadine nasal spray (0.4% and 0.6%) reported statistically significant reductions in TNSSs (reflective and instantaneous) and quality-of-life measures compared with placebo.(10)

Our aim of the research is to determine the efficacy of antihistamine nasal spray compared with oral anti histamines in the treatment of allergic rhinitis. The sedating effects of oral antihistamines can totally be avoided in case nasal sprays have the same efficacy.

METHODOLOGY

This randomized controlled trial was conducted ENT Department of a Services Hospital, Lahore from February 2020 to September 2020. Total of 450 cases were included, 225 cases were in group A who were given oral antihistamine ebastine 10mg OD, and 225 cases were in group B who were received nasal antihistamine spray olopatadine 0.6% (600mcg/100microlitre)

Patients were considered to have allergic rhinitis based on their history and clinical examination, as well as their regular follow-up. Patients were then followed up every 2 weeks for 01 month.

Cases were clinically diagnosed based on a detailed history in which patients were specifically queried about symptoms of itching, redness, watering, and swelling, as well as seasonal fluctuations in symptoms, their habits, and family history. The study included patients with nasal discharge, sneezing, and nasal obstruction, as well as any of the following ocular symptoms: itching, redness, watering, and edoema. Children under the age of two and pregnant women were excluded. Clinical examinations - Following standard local examinations of the ears, nose, and throat, a full systemic examination was performed.

Data was entered and analyzed in SPSS. Age were presented as mean and SD. Gender, symptoms of disease and effectiveness of medication with both groups were presented as frequency and percentage. Chi square test were apply to compare the effectiveness of medication with group, P <0.05 was considered as significant.

RESULT

Total 450 patients were enrolled. The mean age was 24.5+ 3.0 years. There were 270(60%) male and 180(40%) female. Patients were divided into 2 groups and were followed every two weeks for a period of one month. In group A, 140(62.2%) male, 85(37.7%) female and in group B, 95(42.2%) male, 130(57.7%) female). Table: 1 In group A, there were 72(32%) patients 10 to 30 years of age group and 153(68%) were 30 to 50 years of age group. In group B, 65(28.8%) patients between 10 to 30 years and 160(71.1%) above 30 years of age group. Table: 2

In our study, sneezing was the most common 441(98%) followed by rhinorrhea 427(94.8%), nasal obstruction 338(75.1%), itching in nose 320(71.1%), headache (198(44.0%) and watering 150(33.3%). Figure: 1

Out of 225 patients enrolled in Group A, 153(68%) patients got relief and 72(32.0%) patients felt decrease in symptoms of Allergic rhinitis. In Group B, 144(64.0%) patients got relieved of symptoms, 81(36.0%) patients were partially relieved.

Table 1: Distribution of Gender in Groups

Gender	Group 1	Group 2	Total
Female	85(37.7%)	95(42.2%)	180(40%)
Male	140(62.2%)	130(57.7%)	270(60%)
Total	225(100%)	225(100%)	450(100%)

Table 2: Distribution of Age according to Groups

Age	Group A	Group B	Total
10-30 years	72(32%)	65(28.8%)	137(30.4%)
30-50	153(68%)	160(71.1%)	313(69.5%)
Total	225(100%)	225(100%)	450(100%)

Better overall assessment of efficacy was shown for oral antihistamine ebastine as compare to nasal antihistamine spray, (p < 0.05, and p = 0.002). The overall assessment of efficacy was completed on a 4-point scale (1 = very good, 2 = good, 3 = satisfactory, 4 = insufficient). Both group of participants who completed the treatments, the overall assessment of efficacy was rated as very good or good by 67% participants for azelastine in group A and in group B, overall assessment of efficacy was near to 60%. But oral antihistamine ebastine significantly better than antihistamine nasal spray (p < 0.05). Table: 3

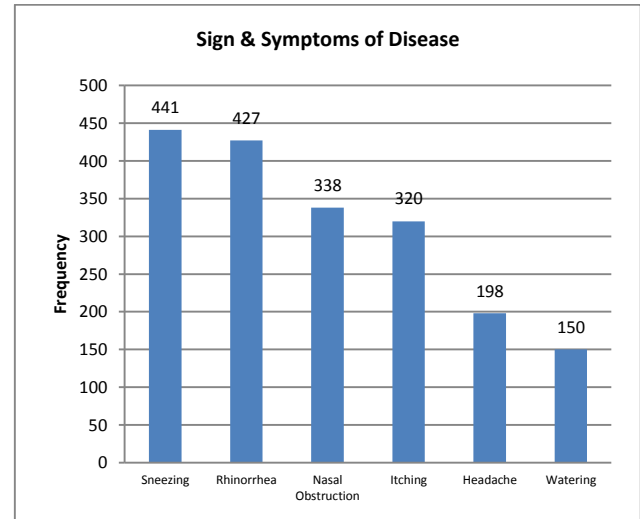


Figure 1:

Table 3: Participant ratings of overall effectiveness of the medication

	Group A	Group B
Very Good	110(48.8%)	98(43.5%)
Good	43(19.1%)	46(20.4%)
Satisfactory	56(24.8%)	25(11.1%)
Insufficient	16(7.1%)	56(24.8%)
total	225(100%)	225(100%)

DISCUSSION

In this study, sneezing was the most common 441(98%) followed by rhinorrhea 427(94.8%), nasal obstruction 338(75.1%), itching in nose 320(71.1%) etc.. In Group A, 153(68%) patients got relief and 72(32.0%) patients felt decrease in symptoms of Allergic rhinitis. In Group B, 144(64.0%) patients got relieved of symptoms, 81(36.0%) patients were partially relieved.

An inflammation of the nasal mucosa known as allergic rhinitis (AR) causes nasal discharge, itching, sneezing, and congestion. AR frequently causes ocular symptoms such as redness, tearing up or itching, and itching or burning in the eyes. One of the medical treatment is intranasal corticosteroids, and its impact on nasal symptoms is well known.(11)

Allergic rhinitis is a common disease characterised by nasal itch, sneezing, watery and mucous rhinorrhoea, and nasal obstruction.(12) The condition is often accompanied by allergic conjunctivitis. In the past 30 years there has been a dramatic increase in the prevalence of allergic rhinitis, and studies from England, Sweden, and Australia have confirmed a doubling of prevalence over this time. (13) Studies from Australia showed that in Tasmania the prevalence of hay fever is 41% and that hay fever is the second most frequently self reported condition in Australia. (14)

Apart from local disease, allergic rhinitis can cause considerable morbidity including chronic sinusitis and otitis. The condition can also cause irritability and impaired sleep which can affect quality of life by leading to poor performance at school or work, absenteeism from school or work, and chronic tiredness. It

can also have detrimental effects on emotional and social wellbeing.⁽¹⁵⁾ Treatment of allergic rhinitis includes avoiding allergens (when possible), intranasal corticosteroids, short term decongestants, oral or topical H₁ receptor antagonists (antihistamines), intranasal cromoglycate, anticholinergic agents, and allergen immunotherapy.

Due to the significant frequency of allergic rhinitis (AR), an upper airway condition, it is important to fully understand it and provide the appropriate care. Many elements of AR are still unexplained and call for further research, despite the fact that the mechanisms underlying its pathophysiology and therapy have been extensively investigated.⁽¹⁶⁾

IgE-mediated type 1 hypersensitivity diseases such as allergic rhinitis (AR) and asthma are brought on by a variety of environmental allergens, such as pollen (primarily of outdoor origin), arthropod- or mammalian-derived allergens (primarily of indoor origin), such as dust mites, cockroaches, cat allergens, or moulds. Other rhinitis phenotypes, such as those brought on by irritants or occupational allergens in a specific workplace, might have an allergic, non-allergic, or mixed inflammatory character.⁽¹⁷⁾

Removal or avoidance of allergens, medication, immunotherapy, and surgical intervention can all be used as therapies for allergic rhinitis. When it comes to enhancing and preserving quality of life, pharmaceutical treatments like antihistamines (AH), leukotriene receptor antagonists, topical steroids, vasoconstrictors, etc. are crucial. Antihistamines, in particular, are frequently used for mild to severe illnesses. They come in oral, eye drop, and nasal drop forms. In fact, an observational study in Asia found that antihistamines were used to treat allergic rhinitis in patients most commonly (about 50%), followed by nasal spray steroids (about 30%).⁽¹⁸⁾

A special antiallergy medication with many mechanisms of action is loperadine HCl. It functions as a selective H₁ histamine receptor antagonist and prevents human mast cells from releasing histamine and other inflammatory mediators. The benefit of administering antihistamines topically is that it minimizes systemic negative effects while delivering a high concentration of medication to the target organ. Ophthalmic olopatadine has demonstrated a rapid onset of action in clinical tests and is well tolerated. For the prevention and treatment of SAR, olopatadine hydrochloride is currently being developed as an intranasal formulation.⁽¹⁹⁾

CONCLUSION

The conclusion of the study that oral antihistamine and intranasal antihistamine nasal spray proved that treatment results of both treatment options were comparable in terms of reduction in the symptoms of allergic rhinitis.

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